

MEETING MINUTES (FINAL)

CITY OF TUCSON HABITAT CONSERVATION PLANS (HCPs)

Technical Advisory Committee (TAC)

Wednesday, October 21, 2009, 1:00 – 4:00 p.m.

U.S. Fish & Wildlife Service, Tucson Field Office

201 North Bonita Avenue, Suite 141

Tucson, Arizona 85745

ATTENDEES

City of Tucson (COT) Habitat Conservation Plans (HCPs) Technical Advisory Committee (TAC) members present:

Marit Alanen (U.S. Fish & Wildlife Service)

Rich Glinski (Arizona Game and Fish Department – *retired*)

Paul Green (Tucson Audubon Society)

Trevor Hare (Coalition for Sonoran Desert Protection)

Ries Lindley (City of Tucson – Tucson Water Department)

Guy McPherson (University of Arizona)

E. Linwood Smith (EPG, Inc.)

Other Attendees, including *ex-officio* TAC members, present:

Jamie Brown (City of Tucson – Office of Conservation and Sustainable Development)

1. Welcome, introductions, and ground rules

2. Review TAC meeting minutes

TAC members requested an additional week to review the minutes.

3. Updates

Jamie said that he wanted to let the TAC know about upcoming HCP deadlines. He said that the COT is working under the third Habitat Conservation Plan (HCP) assistance grant (“Segment 3”) from the U.S. Fish and Wildlife Service (USFWS). According to Amendment 1 of the Segment 3 Intergovernmental Agreement (IGA) between the COT and the Arizona Game and Fish Commission, the final draft of the Avra Valley HCP is due in late January 2010. Jamie noted that the Amendment 1 effort was initiated by Arizona Game and Fish Department (AGFD) in May and is currently under review by AGFD staff in Phoenix. He mentioned that the Environmental Assessment is due in March 2010 and that revisions to sections 5 and 7 of the Greater Southlands HCP are due in April 2010.

Marit said that, in terms of the COT and TAC effort on HCPs, it is nearing seven years and so she has been asked by higher level USFWS staff members to encourage the COT and TAC to finish the Avra Valley HCP in a timely manner. This way, the COT and TAC can then focus on the Greater Southlands HCP. She encouraged the TAC to assist COT staff if they have questions.

She added that, hopefully, the January 2010, not November 2009, deadline would be amenable to all parties as she thinks the USFWS would be comfortable with a January deadline. Marit mentioned that the COT began the HCP process with one HCP and three sub-areas. Now that it has been split into two HCPs, the process is taking longer than it would have if just one HCP were pursued at one time.

Jamie mentioned that, in partnership with AGFD, the COT submitted an application for a fourth HCP planning assistance grant. This would be to work solely on the Greater Southlands HCP. Rich wondered how much time COT staff members dedicate just to activities that will lead to the completion of the draft. Jamie said efforts vary throughout the year because of different demands of staff time and that it would be difficult to estimate without reviewing the time record logs. Rich asked how long HCPs normally take to complete. Marit said that in talking with Sherry Barrett (USFWS), she said that the San Diego HCP – which she worked on directly – took eight years to complete. Trevor said that the San Diego HCP was a lot bigger than the City HCPs. In response to Trevor’s comment, Guy said that each subsequent HCP seems to get more complex, and therefore, requires more time. Rich said that this is trying to use the Endangered Species Act in the “country” of Pima County; it’s different here. Marit added that there are some in the USFWS who think that HCPs should be completed in two years. Trevor said that Pima County is 11 or 12 years into their HCP process.

Jamie reminded the TAC that, at the September 16 TAC meeting, the extra hour of discussion was devoted to mitigation for potential impacts of a utility scale solar project on the COT’s Chu property in Avra Valley. Jamie said that, due to lack of time at that meeting, he did not mention that solar developers have also expressed interest in the Lupori property as part of a separate, future request for proposal. There was question about whether or not these projects would require water for concentrated solar. Jamie and Ries indicated that, as far as they had heard, these would be photovoltaic projects. Pointing at a map, Jamie said that the Lupori property does not have modeled habitat for any of the Avra Valley HCP Covered Species. Assuming that that is correct, he asked if TAC members had any objections to a solar project there. Since TAC members requested more information, Jamie said that he would bring a map showing the Covered Species modeled habitat in relation to the Lupori property. *[Action Item: OCSO share a map of Covered Species modeled habitat in relation to the Lupori property].*

Marit wondered, if a project like this occurs, should the property still be included in the HCP boundary since the HCP has not yet been officially submitted to the USFWS. Jamie said that this scenario is one of the changed and extraordinary circumstances. That is, if the COT sells or leases lands with or without modeled habitat, there is a question of how this changes the HCP, if at all. Rich wondered if the COT needs to rely on a set acreage of HCP Planning Area for the USFWS to analyze the HCP. Marit said that she thinks there is a way to address this change of acreage issue. Marit wondered if the Chu property project was still moving forward. Jamie said that OCSO staff did not have a more recent update from what was discussed at the September TAC meeting.

Jamie said that, at previous meetings, a TAC member said that the COT should always use the term “avoid” before the words “minimize” and “mitigate” in the HCP because that is supposedly part of the “ESA legal language.” Jamie said that he reviewed the Endangered Species Act

(ESA) and only found the words “minimize” and “mitigate” as it relates to Section 10. He said that “avoidance” could be recommended in the HCP, but Jamie wanted to clarify that it didn’t appear to be required per the legal language. Marit concurred and said that “avoidance” may relate more to ESA Section 7. She and Jamie said that HCPs are needed because complete avoidance is not possible.

4. Discussion

Recent Burrowing Owl Management Area (BOMA) discussion

Jamie said that recently, a meeting occurred involving staff from AGFD, USFWS, Tucson Audubon Society, Town of Marana, and the COT to discuss details of Burrowing Owl Management Areas (BOMAs). Jamie said that the COT is interested in focusing, at least initially but not necessarily exclusively, on establishing a BOMA on the northernmost COT-owned properties in Avra Valley (e.g., Simpson, Santa Cruz, Hurst). He said that there are several features that make this land attractive for a BOMA or BOMAs, including the large size as well as proximity to the Santa Cruz River and the Tucson Audubon Society habitat restoration sites. Based on conversations with Ries and other Tucson Water staff, he said that vandalism can be an issue at remote COT-owned properties and so having the additional regular presence by Tucson Audubon Society employees may help protect nearby BOMAs against vandalism.

Jamie said that the group discussed different monitoring options and that what would be helpful for the COT and perhaps the TAC to consider is a menu of monitoring and management activities and recommendations. For example, AGFD biologists think that testing different grass and shrub mowing radii away from burrows could produce information beneficial for other land managers. Since it does not appear that there is any consensus on what specific long-term monitoring activities should occur on these BOMAs, AGFD research branch staff familiar with burrowing owls (BUOWs) offered to draft a proposal for further discussion and consideration.

Paul asked if monitoring the prey base would be proposed. Jamie said that mammal trapping was discussed (as well as predator (i.e. raptor) monitoring). Ries said that he recalled from the discussion that prey base monitoring is one of the more difficult and expensive monitoring activities. Trevor said that pitfall trap arrays could be established and once a year, they could be monitored for seven consecutive days. Trevor said it may be good to consider what Wild at Heart staff deem as a gestalt in terms of locations for relocating owls. *[Action Item: OCSD staff will check-in with staff at Wild at Heart or review TAC meeting notes from when Wild at Heart staff described their work to review what their gestalt is in terms of locations for relocating owls].*

Rich said that the prey base is at the heart of it all in terms of the normal BUOW breeding diet. However, he said that in the winter during migration, BUOW may take other items apart from those of the normal breeding diet and this could be monitored by examining pellets. He said that the Town of Marana had identified a borrow pit as a BOMA, but that the land has since been re-prioritized by the Town as a disc golf course. The Town of Marana HCP Technical Biology Team (TBT) submitted a letter to Town of Marana staff emphasizing the importance of the land for BUOW and disc golf being incompatible with that.

Rich said that BUOW are the perfect bird to engage children through a public education component. He said that perhaps by partnering with the Town of Marana, Pima County, and City of Tucson parks departments as well as Tucson Audubon Society, there could be a BUOW interpretive center established on these COT-owned lands. He continued by saying that adaptive management will really come into play with these BOMAs, because if the prey is not there, there will not be BUOW breeding. If this is the case, it would not make sense to focus on productivity because the TAC talked about the Santa Cruz River being a migratory and wintering area, not a breeding area, for BUOW. So, we're going to have to find out how BUOW use this area. Regardless of how BUOW use the property, Rich said that it should incorporate a wisely designed interpretive area.

In response to the mention of an "interpretive center," Jamie said that regular and open public access to these properties has not occurred in the past and an interpretive center or wildlife viewing area would include opening and closing a gate on a regular, perhaps daily basis. He added that in discussing joint BUOW mitigation, Town of Marana personnel mentioned the need for a gravel driveway and parking lot, but Jamie said he also wondered about restrooms, drinking fountains, Americans with Disabilities Act compliance, and other necessary amenities and considerations, all which could get very expensive. Therefore, he wondered if the public education component could be phased in over time as the human population in Avra Valley increases, and therefore, educational needs grow. Partnerships with other entities could be formed to help with the growth of the educational component. Rich said that it could definitely be phased in and, initially it could just be some good signs and trails, not necessarily an "interpretive center." He added that it could involve applying for available grant funds to establish this. He said that the Town of Marana is really trying to grow their parks program right now. Ries added that, at a previous COT staff meeting, the acting Deputy Director of Tucson Water voiced interest in creating a conservation park on those lands and if that's going to happen, that would be a good location for it. However, Ries said that there was no discussion of what this would look like. He said that Sweetwater Wetlands involved designing and installing interpretive signs and trails. He said he agrees that it is important to have a public component and not just lock off all of the land.

Trevor said that, during a recent meeting, Rich recommended a satellite BOMA and he wondered if, during the BUOW meeting Jamie described, this recommendation was discussed. Jamie said D. Grandmaison also specifically recommended not locating all BOMAs in one area of the HCP Planning Area. Rich said that he spoke with M. Ingraldi about this a year-and-a-half ago in terms of value of the Santa Cruz River and drainage for BUOW. He said that there is so much we don't know about that species.

Marit noted that the 2006 AGFD survey of the properties suggested that these lands provided more of a wintering area and that natural burrows could sometimes be lost due to flooding. She said that at the September TAC meeting, a concern was raised as to whether or not it would be detrimental to the species to install artificial burrows in lands already identified as habitat. She said that in the recent meeting involving AGFD staff, both M. Ingraldi and D. Grandmaison seemed to indicate that installing artificial burrows would not do anything detrimental and would only benefit the BUOW. Thus, the group discussed installing burrows within the modeled habitat in areas that don't have natural burrows. These burrows will likely need to avoid cultural

resources and therefore will need to be raised. She said that the AGFD staff present seemed pretty comfortable with the conclusion that this would not do anything that would harm the BUOW.

In terms of the artificial burrows, Trevor recalled that during a TAC tour of the COT properties, they drove by the above ground artificial burrows near the Tucson Audubon Society project at the Simpson Farm. Rich wondered if they need to be 10 feet high or if they could be 4 feet high. Ries said that they were mounded to get them out of the floodplain and avoid cultural resources. Trevor asked Paul if Tucson Audubon Society had any restrictions on digging holes when doing the restoration work. Paul said that that is a question for Kendall Kroesen but said that in certain places there were restrictions. He said that they do not go deeper than two feet any place on the property. Trevor said that he feels comfortable with the mounds or berms. Rich added that mounded burrows make it easier for the public to see the burrowing owls when they're a distance away.

Jamie said that as part of discussion between the COT and Town of Marana on joint burrowing owl mitigation, Town of Marana staff indicated that the Town would be willing to pay for cultural resource clearance surveys. This would help determine where installing artificial burrows is possible as well as acceptable burrow spatial configurations and design specifications.

Avra Valley HCP Monitoring Program

Jamie mentioned that ecological effectiveness monitoring is a requirement of an HCP and needs to be tied to biological goals and objectives to determine whether or not these are being met. At meetings this summer, the TAC made progress on determining the indicators that should be monitored and different protocols that might be used to, for example, measure xero-riparian vegetation structure. The MacArthur Board Technique was mentioned as one possible protocol. At these TAC meetings, Jamie said that it was recommended that he speak or correspond with several people outside the TAC about monitoring, including Bob Steidl (University of Arizona) and Brian Powell (Pima County). He mentioned that, for over a year, that he has had informal, ongoing conversations with B. Powell about ecological effectiveness monitoring and HCPs.

Jamie said that in recent communication with B. Steidl and B. Powell, it does not appear that, for Pima County's Multi-Species Conservation Plan, many specific vegetation monitoring details have been determined yet that can be shared with the TAC. B. Powell mentioned that Andy Hubbard of the National Park Service was working on refining vegetation monitoring protocols for the Sonoran Desert Network of national parks and monuments. Jamie was alerted to these draft protocols this morning and one question he had was whether or not the sampling design would be scalable to the Avra Valley HCP planning area. And, since it is not final, he wondered how much it could change in the coming months as the COT works to finalize the Avra Valley HCP. Jamie said that B. Powell mentioned yesterday that he may consider some protocol testing in the spring. Given this uncertainty and differing time frames, Jamie said that perhaps it makes sense for the TAC and COT to describe a separate monitoring program and allow for the flexibility to revise the monitoring program later on, if consistency between jurisdictions is possible and desirable.

Trevor said that, according to his recollection of Pima County's latest draft, they do not plan to have a final monitoring program until several years after the issuance of the Incidental Take Permit. For him, the important thing to determine is the information that the TAC wants from the monitoring program and that will inform the protocols that are chosen. He said that experts are working on this and we should let them. He added that the COT doesn't need to know how many days on the ground it's going to take and other details.

Rich said that the TAC should know what the USFWS has in terms of standards for monitoring and management. Trevor disagreed saying the TAC needs to determine this. Rich said that the point is that we measure to the inch but our ability and need to manage responsibly is to the foot. So, Rich asked rhetorically, "Why get to that inch?" He thinks the TAC and COT should determine the objective as well as the capability the COT has to manage and then develop a responsible measurement tool that lets the TAC determine a threshold. Rich said that when we get to this threshold, we know that something needs to be changed as far as management or adaptive management goes. Trevor said that he liked the flow charts for each species because they don't get into the weeds, but they have management objectives and management responses. He added that they should all be qualified by saying that this is what we know now, but this will be adaptive. Trevor said that details on how the COT monitors will come later and will need to be cost-effective, but also capture the information needed.

Trevor said that he thinks the USFWS would be comfortable with the COT's HCP as long as objectives are in place. This is because they realize that monitoring program planning takes money and time and that doesn't start as soon as one begins to develop an HCP because one doesn't yet know what needs to be monitored. Marit said that her understanding of HCPs is that the monitoring component has generally been inadequate or never fleshed out very well. Therefore, with these three or four local HCP efforts underway, we're breaking new ground. Rich said that he thinks it's worth the extra time. Trevor agreed and said that, like Guy mentioned, every HCP builds on the previous one, especially when the community has high expectations. Jamie added that COT staff would like to know, as specifically as possible, what the COT will need to do and pay for over the 50-year term of the HCP.

For TAC feedback, Jamie listed some possible general monitoring program goals based on what has been discussed at previous meetings. These included:

- *Inform progress toward meeting biological goals and objectives for each Covered Species.*
- *Monitor commensurate with the level of impacts that actually occur. This acknowledges the uncertainty over whether or not any of the Covered Activities will actually occur during the term of the HCP.*
- *Work towards consistency of monitoring efforts with other local agencies and jurisdictions as possible, practical, and cost-effective.*

For the second goal, Jamie said that it is also important to acknowledge that Rich has recommended that certain areas and/or indicators be measured at the outset of HCP issuance to provide a baseline, regardless of whether or not any Covered Activities occur. Rich said that this could include vegetation structure for birds or soil profile for the snakes. However,

measurements would not need to re-occur until triggered by the need for set-aside of those lands as mitigation.

For the third goal, Jamie said it acknowledges Trevor's recommendation that we coordinate with other jurisdictions, but that the COT is not necessarily dependent other jurisdictions' monitoring program(s). Guy said that the sense he is getting is that what is holding up HCP efforts, in general, is the inability to monitor effectively. Marit said that she couldn't say if the USFWS has a standard for monitoring. Jamie said that the USFWS guidance in the five points policy is helpful. However, based on his recollection, he didn't think that the policy was explicit about whether or not monitoring needed to be statistically meaningful and how so.

Linwood asked if the Pima County process still had two camps: statistical versus non-statistical. Trevor said he didn't know. Guy said that he thinks that power analysis and statistical validity would be required in this day in age. Linwood said that this may be extremely costly. Trevor said that there's a balance. Jamie said that if there is TAC agreement that monitoring should be commensurate with the level of impacts, this raises questions when considering statistical trends. He used a hypothetical example of a Covered Activity that is proposed within modeled habitat that triggers the need for 200 acres of mitigation land set-aside. However, if only monitoring this one set-aside area, it would only be statistically meaningful for those lands, not the remainder of the HCP Planning Area.

Trevor said that simply applying for and receiving an Incidental Take Permit should be considered an impact and that the COT should fund an initial baseline data gathering effort. Guy said that it is worthwhile to consider that the folks developing the monitoring program for the National Park Service are fully involved with that task; that's all they do and they probably receive dedicated funding for that activity. Given that, he said that it is hard for him to imagine Pima County or the COT being able to achieve that same high standard. Trevor said he agreed. Guy said, however, that their work would be an important resource to tap into.

Based on the draft monitoring flow charts he created and distributed prior to the meeting, Jamie asked TAC members for input. For the lesser long-nosed bat (LLNB) flow chart, a draft management objective was stated as "Allow a maximum average decrease in total vegetation volume of 30% from baseline measured every 5 years." Jamie said that while the numbers may need to be adjusted, the point is that the statement allows for slow and natural variation prior to triggering a management response. This is why it is not recommended that the vegetation be measured annually. Marit asked about the use of the word "average" and Jamie said what was meant there was to average the measurements from all the samples to calculate the percent change. Jamie also clarified that the 30% change is from the original baseline and that the intent is not to change the baseline every 5 years. In other words, the percent change would not be measured from each 5-year measurement. Trevor asked where the 30% came from and Jamie said that it is just a placeholder figure based on his reading of vegetation monitoring papers and texts. Trevor said that losing 30% before triggering management action seems like a lot. However, he said that, measuring a 5% decrease, for example, would be very difficult. Jamie said that debating the figures may be jumping ahead since the TAC has not determined exactly what vegetation features it recommends the COT measure and how.

Rich wondered if there would be any enhancement or restoration on these lands if no Covered Activities occurred. He said that if the area contains a mature bosque, then vegetation volume would likely stay the same or go down. However, if it is a young bosque, one would expect vegetation volume to increase. For a young bosque, if it decreases or stays the same, then this would be a much bigger loss than just 30%. Jamie said that allowing for variation also acknowledges that a monitoring site may be disturbed by a flood, which would influence the vegetation volume or whatever vegetation feature the TAC recommends that the COT monitor.

Trevor mentioned that he liked Jamie's proposed management response to this decline (i.e., more frequent measurements would be necessary to determine if a trend is an anomaly or real). He added that if the additional measurements determine that this is a real change, this is when it would be helpful to try to determine, based on other measurement, what happened, such as climate change, defoliation by insects, or something else. Jamie agreed and said that this is why gathering weather and climate-related data are included as an ongoing monitoring activity. Trevor recommended leaving the percentage as "To be determined" by mesquite bosque experts. Linwood said he agreed that 5% was too low because it would be well within the range of observer error. Linwood said he thinks 30% is a pretty good number. Ries said his discomfort is with a low percentage unless the measurements could be corrected for weather. For example, he said if we have low rainfall, that loss would have occurred anyway and that is not a management issue but a weather issue. Trevor said that we know that weather patterns may be very different over the life of the HCP. We may get more precipitation or we may get less and that needs to be part of the adaptive management.

Rich mentioned the Hohokam civilization and said that their communities no longer exist because of changes in precipitation. We can't figure that and so he said he likes the structure that Jamie presented, such as having thresholds. He added that we may not all like the numbers and we certainly don't know what the future is going to be, but he said he thinks this is a workable strategy. It just needs to be fine-tuned with numbers that are defensible.

Jamie mentioned that, at previous meetings, the TAC discussed fire threat on riparian vegetation as an important indicator to monitor. Trevor said that he was changing his mind about that. He said that this area, prior to all the disturbance, was an ecotone between desert grassland and desert scrub and so it probably burned at some frequency. There is evidence that riparian areas burned more often than previously thought, although this is inconclusive. So, the fire threat on these COT-owned lands is the buffelgrass, but we may get a desert grassland naturally creeping in from the south, restoring itself in the center of the valley. Jamie said that perhaps that belongs in the table of changed circumstances. Ries said that he thinks we are not going to eliminate buffelgrass and it might be better to have some reasonable threshold of fire danger from buffelgrass rather than complete elimination of it. Jamie agreed, but requested some guidance on how to quantify an acceptable level of fire danger or amount of buffelgrass for the HCP.

Linwood said that perhaps as part of baseline surveys there is a way to detect or estimate the amount of buffelgrass in the modeled habitats and say if there is an increase of "x" percent, then this would trigger management action. Trevor agreed and noted that the percentage should be high enough to account for observer error. Jamie said that he thought that it would be difficult to survey the entire planning area habitats and that vegetation monitoring would be narrowed to

plots. In speaking with B. Powell, he seemed to indicate that buffelgrass monitoring should not necessarily be statistically meaningful; it could be qualitatively assessed. So, this is why Jamie recommended covering a larger area using belt transects or some other method to survey large areas quickly.

Guy said that perhaps buffelgrass should be monitored from the air with color infrared imagery. Ries said that he thought the problem with this approach is that buffelgrass didn't have a very clear spectral signature from the air. Marit said that, from what she has heard, it is very difficult to measure from the air because there is such a short window when buffelgrass is green. She said that maybe if that is the only vegetation on the ground, it is possible because it would be the only green vegetation. Trevor thought that the Buffelgrass Working Group received money to map buffelgrass and recommended that Jamie check with them. Linwood said that if there is concern about buffelgrass in riparian areas, it would be tucked under the canopy and would be difficult, if not impossible, to detect from the air with current technology. Trevor said that it could be inferred that if buffelgrass is detected from the air immediately adjacent to the bosques, then it is likely that there is also buffelgrass within the bosque. This would take some ground-truthing. Guy said that maybe it is not possible to monitor from the air. Jamie said that he recommends including language in the monitoring program that allows for altering the monitoring program to incorporate improved technology, referring to B. Powell's mention of LIDAR being a potentially powerful tool.

Ries said that, ultimately, the City's Water Department will need to keep track of buffelgrass and work to control it. Currently, however, there is no proactive buffelgrass monitoring and management program. Linwood thought that in these xeroriparian areas, one is more likely to encounter an individual clump of buffelgrass, not large patches. Rich said that underneath the canopy is where one is more likely to find *Bromus rubens* (Red brome) and *Sisymbrium irio* (London rocket). Rich said this is the source of the fire threat and Trevor added that there have been major fires fueled by these grasses. Linwood said that the fire in Catalina State Park that burned up the mountains was fueled primarily by *Sisymbrium*. Jamie wondered if it would be possible to manage for these non-native annuals. Guy said that what was discussed before is that the presence of annuals like *Schismus* (Mediterranean grass), *Sisymbrium*, etc. are closely tied to a climate signal. If there are two successive years of above average precipitation, it is highly likely that large amounts of these annuals would be present and fire danger would be high. Guy said that monitoring weather would be important for this. Given this, Jamie asked for recommendations on the management response to this climate signal.

Rich said that if this land is to be given to a land trust, they would likely require a large up-front endowment fee. This would be used to manage the land, such as grubbing out these annuals so that fire danger is reduced and ensuring that the habitat and structure that are being preserved remain intact. Jamie wondered what would happen then prior to these lands being set-aside as mitigation lands. Guy said that if fire danger is thought to be high, the COT should consider grazing these areas. Ries wondered if cattle would eat red brome and Guy said yes. Rich said that when areas of the San Pedro River were grazed, it reduced fire danger and was not very destructive. Trevor said that goats would not work because of the presence of big-horned sheep at nearby Ironwood Forest National Monument. Jamie asked Ries what he thought of grazing on these lands and he said that if it was a more cost effective management tool than other

eradication techniques, it could be worth further consideration. Ries added that he would be concerned about long term leases, but if the cattle were there for a short while and were removed during the next round-up, it may be possible. Guy said he was talking about minimal grazing, such as grazing for six weeks every tenth year. It is a big organizational and logistical hassle because you have to go find a bunch of cows. Trevor said you also have to find a rancher willing to work with you and who is flexible. Despite this hassle, Guy said it could work. Jamie said that he thinks this needs careful consideration given that putting a rancher's livestock on COT-owned lands, even for a short time, could have unintended consequences or liabilities, especially if Avra Valley becomes more urbanized.

Guy asked if the threat assessments for each of the species were used to inform the flowchart. Jamie said that the flowcharts were based primarily on TAC input to previous monitoring documents and meeting discussion. He added that, while the threat assessment tables would be good to cross-reference to make sure that nothing important has been omitted, he said that some of these threats are not as relevant to the Avra Valley HCP Planning Area. As an example, he mentioned the threat of LLNB roost disturbance being listed in the threat table and noted that there are no documented LLNB roosts in the HCP Planning Area. *[Action Item: OCSD staff will cross-reference the threat assessment tables in the Preliminary Draft HCP to see if any threats should be included in the monitoring program].*

In terms of light pollution, Guy wondered if the Kitt Peak observatory monitors light pollution and if that would be a useful tool. Jamie said he based this indicator – mean lumens per acre – on AGFD's recent LLNB movement study report. TAC members recommended getting AGFD input on light pollution monitoring. *[Action Item: OCSD ask AGFD staff for their input on light pollution monitoring for the Avra Valley].* Ries said he would need to ask about this, but he thinks that, for the proposed Covered Activities, artificial outdoor lighting would mostly be needed for emergency repairs. Trevor said that from the Arizona – Sonora Desert Museum, lights could be seen at the COT's Central Avra Valley Storage and Recovery Project.

With regard to the pale Townsend's big-eared bat (PTBB), Jamie said that during previous discussions about monitoring, the TAC had not talked specifically about sensitive attributes to measure in terms of its modeled habitat. Trevor said that at a recent TAC meeting dedicated to talking about the Greater Southlands HCP, there was a good discussion about what habitat means for the PTBB and whether or not it is a 50-foot buffer, the interior of the corridor and/or the top of the corridor. Trevor said that he thinks the extent of the edge would be pretty easy to measure on an aerial image. That, along with habitat measurements of the same mesquite bosque modeled habitat for the LLNB and others, would be enough. Jamie mentioned that what is described in the Greater Southlands HCP as habitat for PTBB differs from the modeled habitat of Avra Valley. In the Greater Southlands, the modeled habitat includes the 50-foot interface from the riparian edge, the spatial "envelope" for which is based on Pima County's "Harris Riparian Study" GIS file. In Avra Valley, there is another model altogether and this is based on a composite vegetation map that excludes the previously cultivated lands. Trevor wondered why the TAC has two separate models. Jamie said he wasn't sure since the modeling occurred before he started work with the COT. Setting aside that question for now, Jamie asked the TAC what attributes of the landscape in the Avra Valley HCP Planning Area are most important for the PTBB and should be measured over time. Trevor said that he thinks what has been discussed for the Greater Southlands should

apply in Avra Valley, too. He added that measuring the edge of the riparian habitat would be the indicator and not decreasing it would be the management response. He said the edge plus 50-feet would give the acreage of foraging habitat. Guy asked what the metric is and Trevor said “amount of edge.” Trevor said we could just ignore the 50-feet and only quantify the amount of edge. Guy wondered how this “edge” would be defined. Trevor said that PTBB like to forage on moths in close proximity to the riparian vegetation. Guy asked at what resolution this would be measured because if one is standing in the area, there is an infinite amount of edge. That is, the amount depends completely on scale.

Based on the discussion, Jamie wondered if other TAC members were in agreement that the COT should revisit the PTBB habitat model for Avra Valley and make it consistent with the Greater Southlands HCP, adding 50-feet to the mapped xero-riparian habitat for the LLNB. He noted that, based on previous TAC discussion, it sounded like the 50-feet is actually in dispute for the Greater Southlands and may be changed. Linwood said that he didn’t think that the PTBB using the two HCP Planning Areas were different enough to warrant two ways of modeling habitat. He said that it is further confounded by the fact that we really don’t know that much about the PTBB. Trevor wondered what the edge is and if it is a certain distance around each mesquite tree and above each tree canopy. Others acknowledged this uncertainty. Guy said this was his question, “What is and how do we define ‘edge’ for PTBB?”

Trevor said that one thing we know is that riparian vegetation is important to the species. Since it is the only thing we can measure, the modeled habitat should be the same as the LLNB, CFPO, and Western yellow-billed cuckoo (WYBC). Linwood agreed, saying that he thinks the same approach should be used for the LLNB and CFPO since that captures edge. He said he recommends against adding 50-feet because we don’t know if that really has any biological meaning for the species. Linwood said that he provided the 50-foot estimate some time ago. Trevor said that we are trying to protect the mesquite bosque and that is what is important, period. Linwood agreed and said we shouldn’t add artificial contrivances when we don’t fully understand the species. In response, Jamie said he would change the habitat and monitoring of PTBB to be the same as LLNB, CFPO, and WYBC.

With regard to the biological objective “Minimize potential for direct take of foraging PTBB,” Jamie said he wondered what indicators should be used. Jamie said that if light pollution also negatively affected PTBB foraging as it does with LLNB movement, the same standard could be used for both species. Linwood suggested changing the biological objectives to say “Maintain” instead of “Provide” habitat. All agreed. In terms of direct take, Trevor said that unlike CFPO that has movements that involve a dip, PTBB could more easily avoid vehicular traffic. Trevor said that it sounded like AGFD found that, with the LLNB, they avoided vehicles by flying above traffic intersections.

Paul asked if bat experts had been consulted to answer some of these questions. Trevor said that bat experts have been consulted during the HCP development process, but that PTBB is a species that is little studied. Biologists know more about the LLNB because it was listed as endangered many years ago and so there are funding sources for studying it. And, since LLNB is a migratory pollinator, that has brought attention to it, too. Linwood said that he talked to Dr. Ronnie Sidner and, at the time of their conversation, she didn’t know much more about PTBB than he did.

Trevor said that he thinks the only time people see this bat are when they see them in a roost or in a cat's mouth. Based on Paul's question, Jamie said he would review the PTBB threats table that was informed by species experts. Trevor said that since PTBB roost in the soil pipe caves, they could be roosting in Avra Valley. Linwood emphasized that they could be, not necessarily that they are, roosting in the HCP Planning Area. Trevor said that this is where there would be a need to avoid direct take by avoiding impacts to these roost structures. Guy said that he would think Brawley Wash would have these soil features. Jamie said that he recalled from reading TAC meeting minutes from previous years that Geoff Soroka and another person looked for these features along the Brawley Wash. Trevor said he recalls that they did not find any of the features. Jamie will review these minutes to confirm. Trevor recommended that prior to any Covered Activities that may impact washes, that they be surveyed for soil piping caves so that they can be avoided.

With regard to the flow chart for the Western yellow-billed cuckoo, Jamie mentioned that the habitat within the HCP Planning Area is primarily dispersal, although there is a narrow sliver of potential breeding habitat along the Santa Cruz River at the North Simpson property. *[Action Item: OCSD staff will revise the flow chart to be explicit about "Minimize potential for mortality of WYBC" in terms of breeding habitat along the Santa Cruz River].*

In terms of the CFPO, Jamie said that although the indicators, etc. are the same for CFPO overwintering habitat as with the LLNB movement and WYBC dispersal, the TAC has not specifically talked about monitoring CFPO in terms of dispersal habitat. Jamie referred to an example of this modeled dispersal habitat. Since he was not with the COT at the time of modeling, he asked the TAC what vegetation features were considered important that could inform the monitoring program. Trevor said that, like the PTBB and other Covered Species, mesquite bosque is what is important for the dispersal needs of CFPO and asked other TAC members if they agreed. Rich said yes, that it is woodland structure that is dispersal habitat for the species. Trevor said that the CFPO that was flying between the Silverbell and Roskrige Mountains flew across active and retired farmlands as well as desert scrub, but wasn't stopping anywhere. Trevor wondered if there was potential breeding habitat (e.g., saguaros with cavities) on the far western edge of the HCP Planning Area. He said that there is one parcel that has never been disturbed and contains Sonoran desert scrub habitat. Ries said that Trevor was probably referring to the Trust 205 property.

Jamie said that it sounded like TAC members were saying that CFPO dispersal habitat is the same as CFPO potential over-wintering habitat; it is the mesquite woodland of the mapped xero-riparian areas. He said he would make this change to the HCP. Rich said that in modeling these habitats, they looked at aerial orthoimages on a large map for each farm; they did not go out into the field. Jamie said that, as part of the 2006 Avra Valley land inventory baseline study, someone from Tucson Audubon Society visited all of the properties and took photos. He said he would review these to see if they documented the presence of saguaros. He added that if COT staff visit these properties on the eastern edge of Avra Valley in the coming weeks, they will look for characteristics of CFPO breeding habitat.

In terms of reducing barriers to movement and minimizing potential for mortality of CFPO, Jamie thought that monitoring for these objectives might be linked by vehicle traffic or roadway

improvements as an indicator. Since building or widening public roadways is not a Covered Activity in the Avra Valley HCP, he thought that management responses would need to take the form of recommendations to the agency planning a roadway project. Trevor said that if there are plans to build or widen a public roadway bisecting modeled habitat, it makes sense to require adherence to environmentally sensitive roadway design guidelines. Rich said that the arrangement of the dispersal/over-wintering corridor for the CFPO should be considered also. If the distance between the patches of xero-riparian habitat become so great that the corridor is no longer functional, he said he thinks that is a barrier to movement. He continued by saying that if a fire occurred that destroyed some CFPO woodland habitat and a Covered Activity is proposed that would impact CFPO habitat, then the mitigation should focus on trying to restore the connectivity lost by the fire. Or, perhaps this would consist of creating a vegetated visual screen for a Covered Activity that incorporates mesquite trees. Trevor added that perhaps using fast growing palo verde species instead of slow growing mesquite could be an option. This would at least provide perch structure and cover.

Paul asked if feral cats had been considered as something to monitor for the species. Trevor said not for the Avra Valley HCP because the Covered Activities are not residential in nature. However, he said that feral cats would be something to address in the Greater Southlands, such as considering covenants, codes, and restrictions. Jamie said that, as part of Pima County's draft MSCP, they included as a changed circumstance, an effort to remove feral cats if the presence of these animals became noticeable. He would have to refer to the document to be more specific. Trevor noted that residential development around the Avra Valley HCP Planning Area is likely to grow and, although coyotes help to control the population of feral cats, they could still become a problem. So, he recommended including a changed circumstance such that if managers or field personnel begin to notice large numbers of feral cats every time they visit a parcel, then a management response is recommended. *[Action item: OCS staff revise changed and extraordinary circumstances to include responding to a large population of feral cats]*. Rich said that, in open spaces, coyotes are effective predators of free-roaming cats. However, in residential areas where there are walls the cats can jump on to escape, that's a different situation.

Changed and Extraordinary Circumstances

Jamie referred to a draft changed and extraordinary circumstances table he distributed earlier. Given the lack of time to review the entire document as a group, Jamie said that he would redistribute the document electronically, ask for TAC feedback, and then review any major concerns or revisions at the November meeting. In terms of the changed circumstance "De-listing of a Covered Species" there was a question about whether or not the COT would need to mitigate in the future for that species or not. Perhaps this is a question for Sherry Barrett (USFWS).

Rich said that a circumstance that should be considered is a situation in which a recovery strategy for a species, such as the CFPO, is changed. This may involve captive-breeding. Trevor agreed and said that if there is a release, there is a question of whether or not those individuals are considered "non-essential" or if they are still fully covered by the ESA. Trevor wondered if the COT should get regulatory relief if, for example, 50 owls were placed in the Roskrige Mountains, which then disperse to COT lands in Avra Valley and, hypothetically, one is accidentally killed during a construction activity. Trevor also wondered if language is needed to

protect the COT in that event. Rich said that the Tortolita Fan is a target area for reintroduced CFPO. But, the point is that it is a “different recovery strategy” than what exists now and these particular CFPO may be considered non-essential or experimental. Guy said that the species is planned for coverage under the Avra Valley HCP and Marit, said, yes, and so the question is whether or not it would need to be treated differently, regardless of whether or not it is an experimental population. Jamie said that perhaps this could be included as a changed circumstance and the response would entail a meeting with the USFWS and TAC to discuss whether or not this would affect the COT’s HCP. Marit said that this might be a good question for Sherry Barrett. Rich thinks that it would not be as punishing if take involved the released progeny of captive-bred CFPO. Guy said that there may be an increased risk of direct mortality by putting so many birds in one place or because they were captively-reared and behave differently than non-captive-bred CFPO. Marit recommended keeping the circumstance and response vague because we are talking about a “different recovery strategy” and there could be innumerable changes and subsequent responses that we cannot predict for the entire HCP Incidental Take Permit duration.

Trevor disagreed with labeling several of the circumstances (e.g., decrease in discharge to the Santa Cruz River, severe freeze, severe drought, etc.) as “extraordinary” and so he recommended asking USFWS staff whether or not these circumstances should be considered “changed” versus “extraordinary.” Jamie agreed. He also said that when redistributing the table to the TAC, he would send the USFWS definitions for changed and extraordinary circumstances.

Rich said that although the TAC is trying to think of all of the possible future circumstances, we won’t be able to anticipate all of them and that’s where adaptive management helps out. Twenty years in the future, he said that he thinks knowing how monitoring has enabled adaptive management will be important. Trevor said that, although we cannot anticipate everything, he thinks this is an important component of the HCP and so the TAC should try to think about all of these circumstances. Trevor suggested that maybe the COT include in the HCP that the TAC revisit the list of changed and extraordinary circumstances every 10 years. During that review, any circumstances that were then deemed to be missing would be added. Rich wondered if there is any USFWS guidance on revisiting these circumstances in 10 years. Trevor said that with the Pima County MSCP, they propose that there is a full-scale review of the entire MSCP every 10 years to determine whether or not mitigation targets have been met and assess the effectiveness of the monitoring program. Guy said that, based on how long it takes to draft these HCPs, it could take five years just to do such a review. Rich wondered who coordinated such a review and Trevor said that the Pima County Administrator’s Office would have the ultimate responsibility.

Jamie said that what Trevor is talking about may involve amending the HCP. Based on his understanding, Jamie said that an HCP amendment is a major and potentially costly undertaking and could involve reinitiating the National Environmental Policy Act compliance process. Marit concurred and said that, as she understands it, amending the HCP would involve reconstituting the TAC and would be like doing another HCP. *[Action Item: USFWS or OCSD staff will see if Sherry Barrett (USFWS) may be available to answer questions at the November TAC meeting].*

4. Upcoming meetings

Jamie will schedule early 2010 meetings via e-mail.

6. Call to the Audience

There were no comments.

7. Adjournment

The meeting was adjourned at 4:00 p.m.

Summary of Action Items:

- *OCSD staff share a map of Covered Species modeled habitat in relation to the Lupori Farm*
- *OCSD will check-in with staff at Wild at Heart or review TAC meeting notes from when Wild at Heart staff described their work to review what their gestalt is in terms of locations for relocating owls*
- *OCSD staff will cross-reference the threat assessment tables in the Preliminary Draft HCP to see if any threats should be included in the monitoring program*
- *OCSD ask AGFD staff for their input on light pollution monitoring for the Avra Valley HCP*
- *OCSD staff will revise the flow chart to be explicit about “Minimize potential for mortality of WYBC” in terms of breeding habitat along the Santa Cruz River*
- *OCSD staff revise changed and extraordinary circumstances to include responding to a large population of feral cats*
- *USFWS or OCSD staff will see if Sherry Barrett (USFWS) may be available to answer questions at the November TAC meeting*